



## 6.4 Maximum Peak Output Power

### 6.4.1 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
<b>ROHDE &amp; SCHWARZ TEST RECEIVER</b>	<b>ESMI</b>	<b>846839/018 848926/005</b>	<b>Dec. 03, 2000</b>
<b>HP ATTENUATOR</b>	<b>8496B</b>	<b>3247A18505</b>	<b>Cal. on use</b>
<b>HP PLOTTER</b>	<b>7475A</b>	<b>2641V27755</b>	<b>N/A</b>

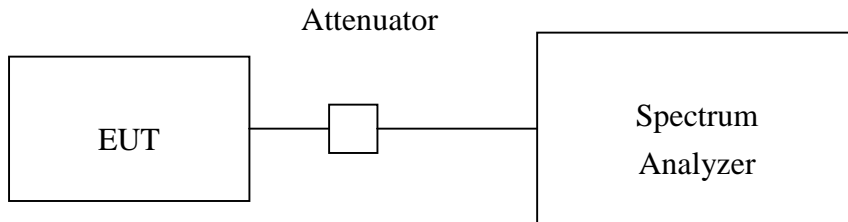
The measurement uncertainty is less than +/- 2.6dB, which is calculated as per NAMAS document NIS81.

### 6.4.2 Test Procedures

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. The center frequency of the spectrum analyzer is set to the fundamental frequency and using 3 MHz RBW and 3 MHz VBW.
3. The span of the spectrum analyzer should be larger than 6dB BandWidth plus 10MHz.
4. Use Peak Search to read the peak power after Maximum Hold function is activated.
5. Shift the marker to +/- 3MHz and +/-6MHz, and record the reading.
6. The Maximum Peak Output Power is the linear summation of the 5 readings in (4) and (5).

Note: This measurement is the total power of 15MHz bandwidth which is far more wider than 6dB bandwidth.

### 6.4.3 Test Setup



### 6.4.4 EUT Operating Condition

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

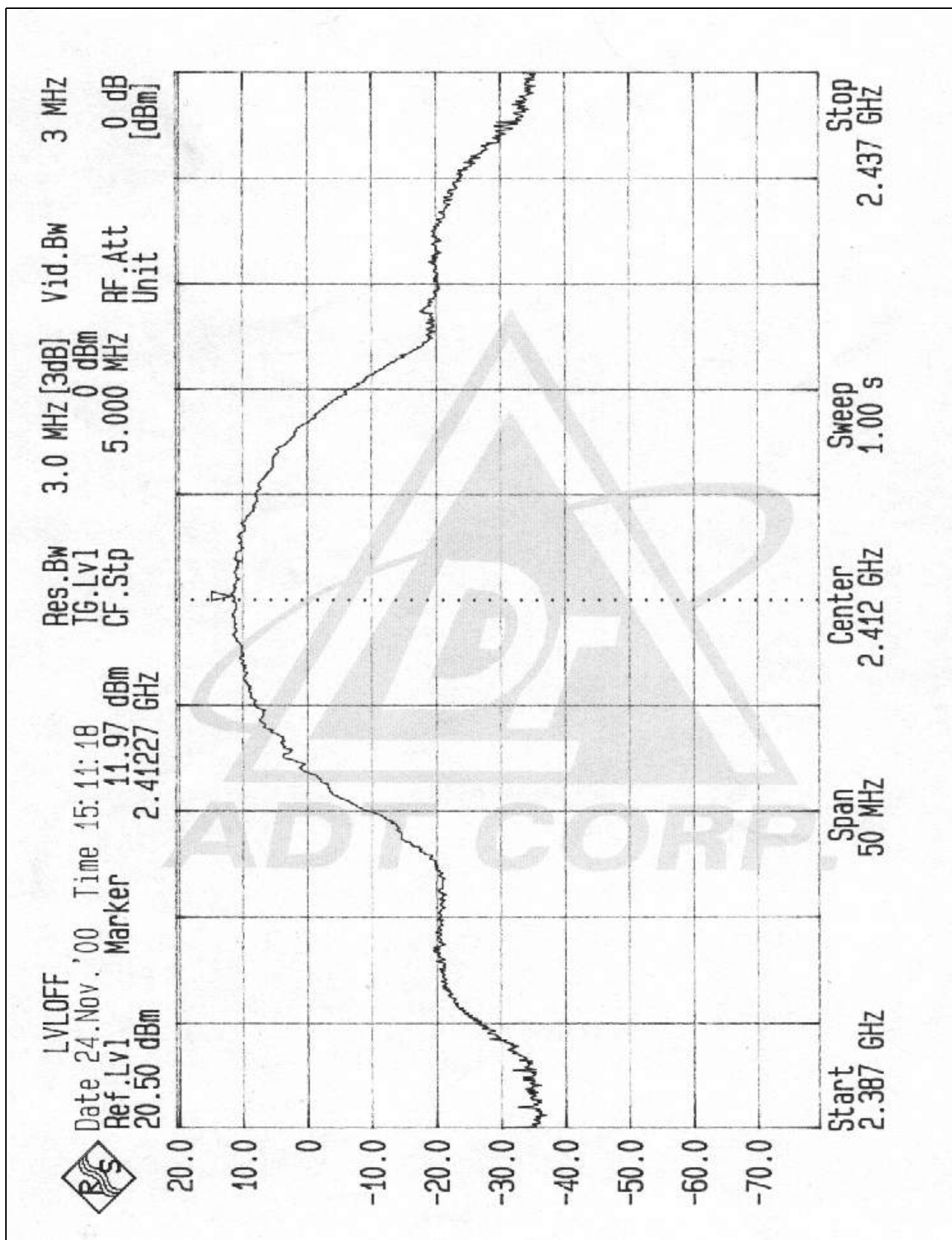
### 6.4.5 Climate Condition

The temperature and related humidity is 24°C and 80% respectively.

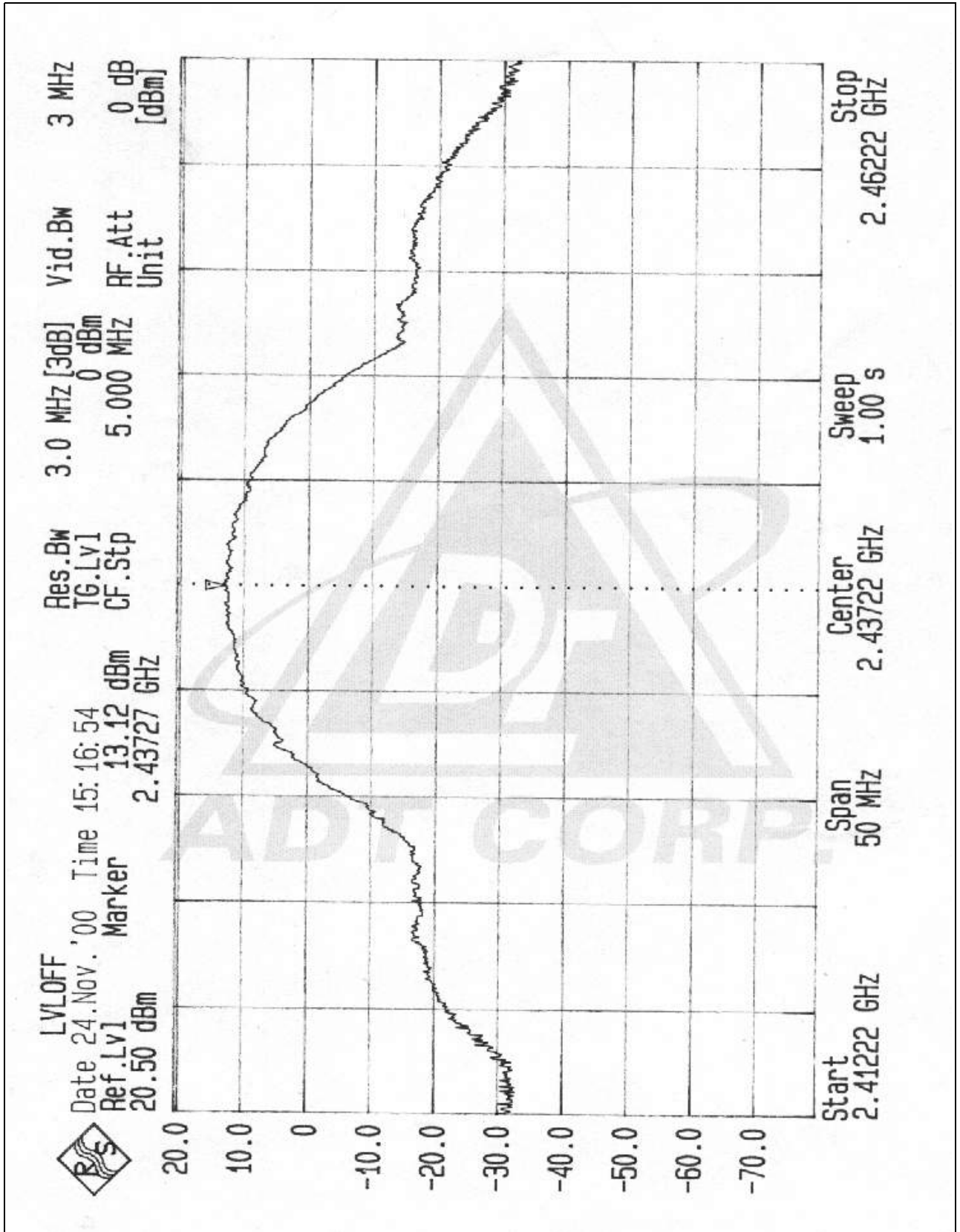
### 6.4.6 Test Result

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	15.86	30	PASS
6	2437	17.05	30	PASS
11	2462	19.09	30	PASS

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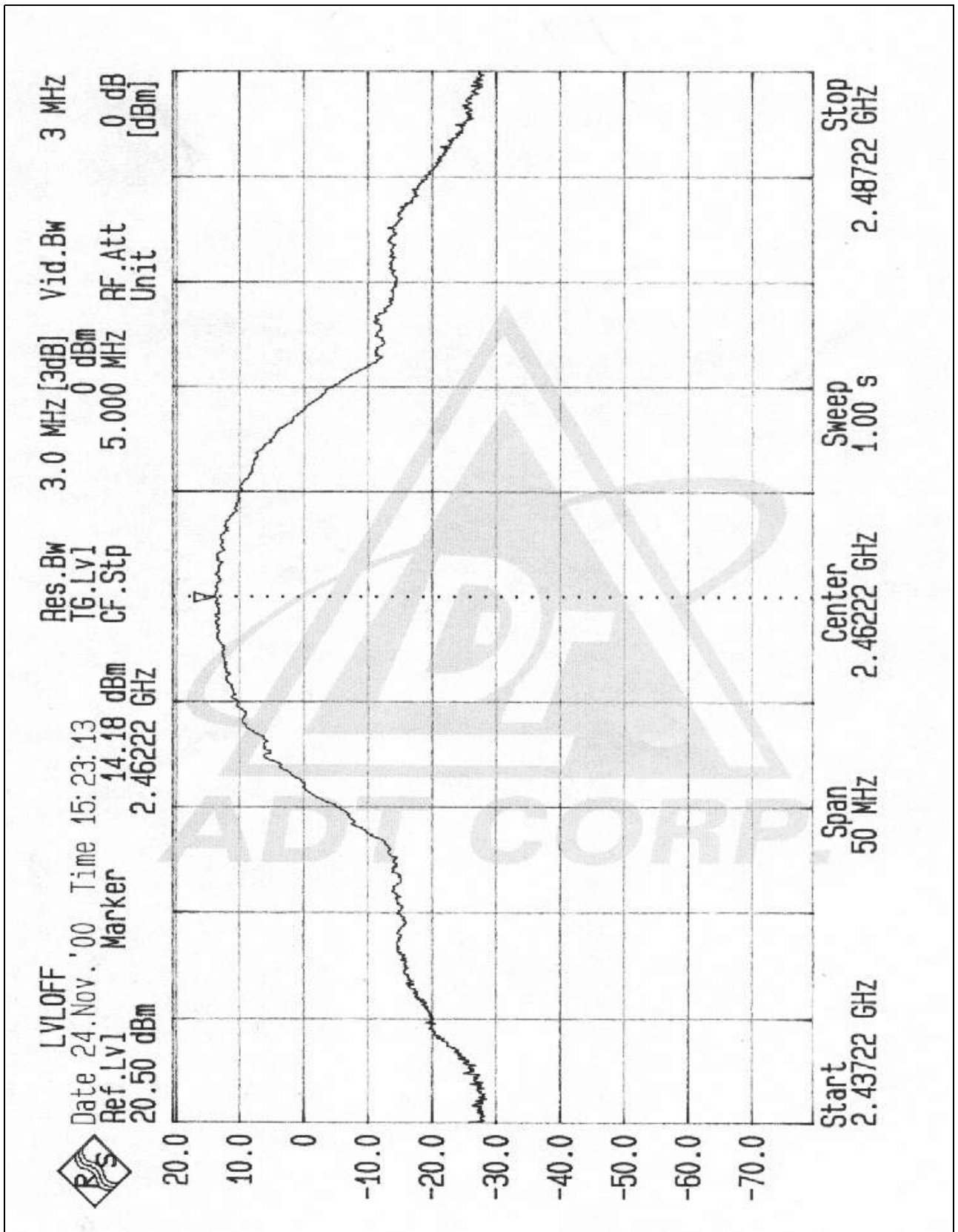


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## 6.5 RF Exposure

### 6.5.1 Test Instrument

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
HP SPECTRUM ANALYZER	8593E	3926A04191	Mar. 03, 2001
HP ATTENUATOR	8496B	3247A18505	Cal. on use
HP PLOTTER	7475A	2641V27755	N/A
FULLY ANECHOIC CHAUSTR	N/A	N/A	July 01, 2000

### 6.5.2 Classification

This Wireless Access Point is allowed to be re-located in the place where is at least 20cm away from the body of the user. Statement of 20cm separation distance warning has been printed on the User's Manual. So, this product is classified as **Mobile Device**.

### 6.5.3 RF exposure limit

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
<b>(A)Limits For Occupational / Control Exposures</b>				
300-1500	...	...	F/300	6
1500-100,000	...	...	5	6
<b>(B)Limits For General Population / Uncontrolled Exposure</b>				
300-1500	...	...	F/1500	6
1500-100,000	...	...	1.0	30

F = Frequency in MHz

The 20cm separation requirement listed in section 2.1091 is met because the output power and the antenna gain is very low. Please see the calculation below.



### 6.5.4 Calculation Procedures

**Friis transmission formula :  $P_d = (P_{out} * G) / (4 * \pi * r^2)$**

where

Pd = power density in mW/cm<sup>2</sup>

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Through the calculation, we know the distance r where the MPE limit is reached.

Ref. : David K. Cheng, *Field and Wave Electromagnetics*, Second Edition, Page 640, Eq. (11-133).

### 6.5.5 RF Exposure Distances

The Gain of the antenna measured in Fully Anechoic Chamber is -0.8Bi.

CHANNEL	CHANNEL FREQUENCY (MHz)	OUTPUT POWER TO ANTENNA (mW)	MINIMUM ALLOWABLE DISTANCE ( r ) FROM SKIN (Centi-Meter)
1	2412	39.54	1.62
6	2437	51.52	1.84
11	2462	82.79	2.34

The minimum allowable distance is very close to the enclosure of the antenna and also very far away from the human being under normal use condition. So, harmfulness to human being is very limited.

## 6.6 Power Spectral Density Measurement

### 6.6.1 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ TEST RECEIVER	ESMI	846839/018 848926/005	Dec. 03, 2000
HP ATTENUATOR	8496B	3247A18505	Cal. on use
HP PLOTTER	7475A	2641V27755	N/A

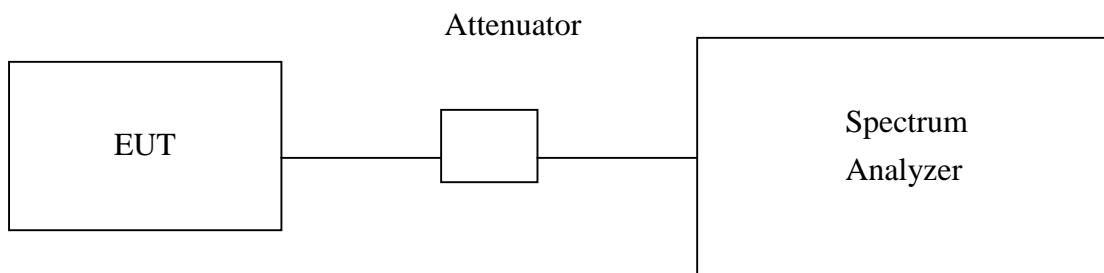
The measurement uncertainty is less than +/- 2.6dB, which is calculated as per NAMAS document NIS81.

### 6.6.2 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time=span/3kHz. The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span/3KHz for a full response of the mixer in the spectrum analyzer.

### 6.6.3 Test Setup



### 6.6.4 EUT Operating Condition

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.





**6.6.5 Climate Condition**

The temperature and related humidity is 24°C and 80%.

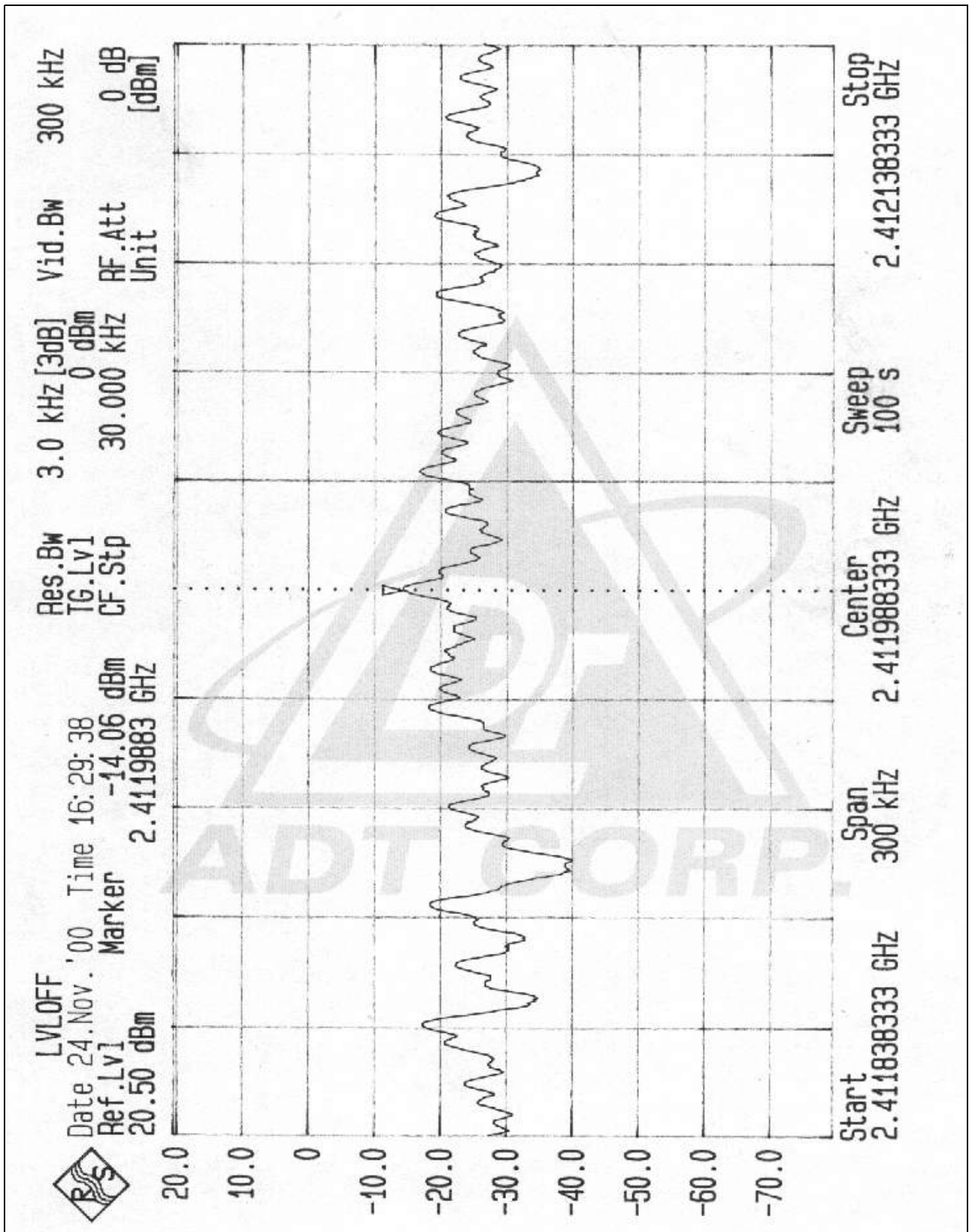
**6.6.6 Test Result**

<b>CHANNEL NUMBER</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>RF POWER LEVEL IN 3 KHz BW (dBm)</b>	<b>MAXIMUM LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	2412	-14.06	8	PASS
6	2437	-10.73	8	PASS
11	2462	-11.57	8	PASS

The spectrum plots of test result are attached as below.

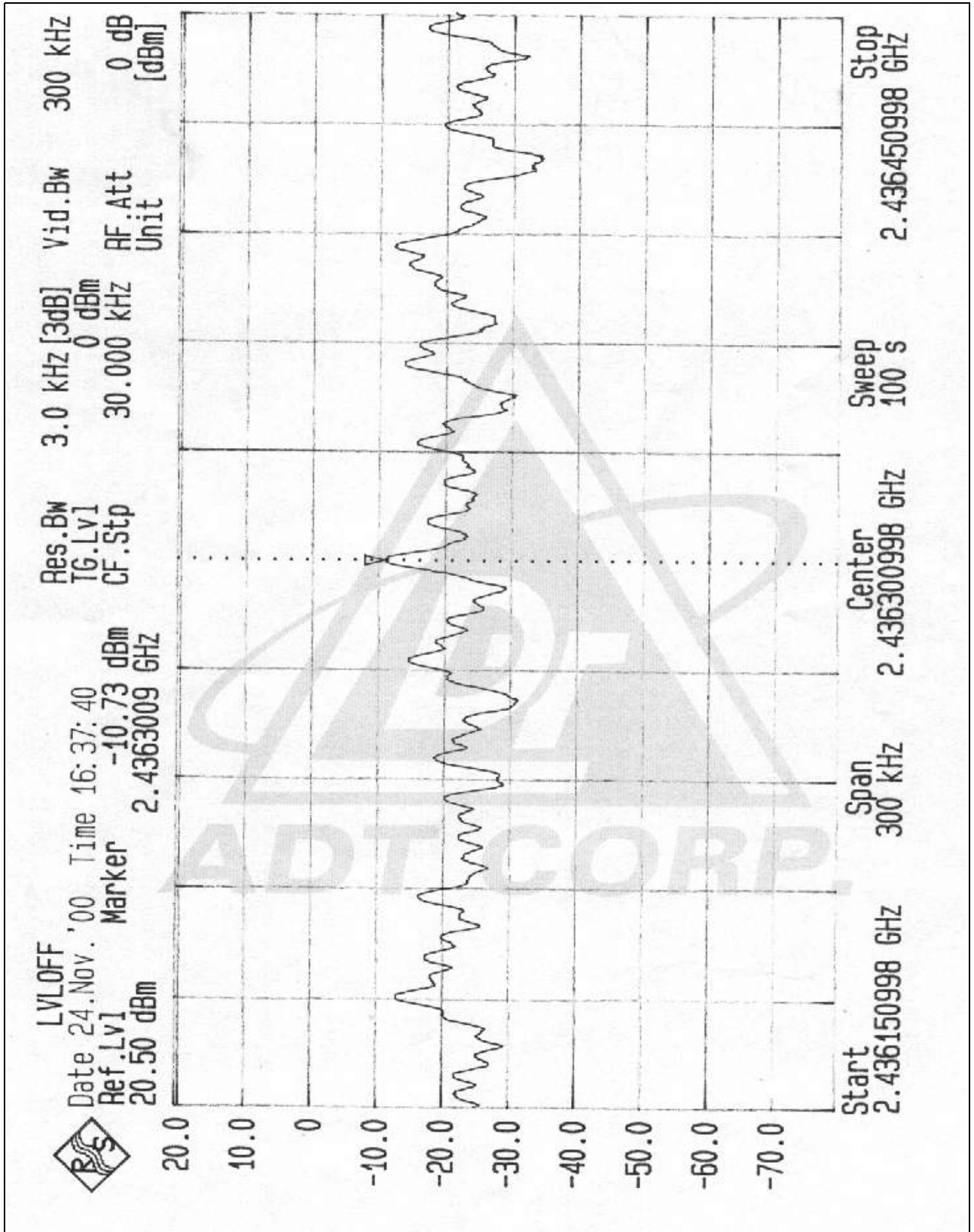


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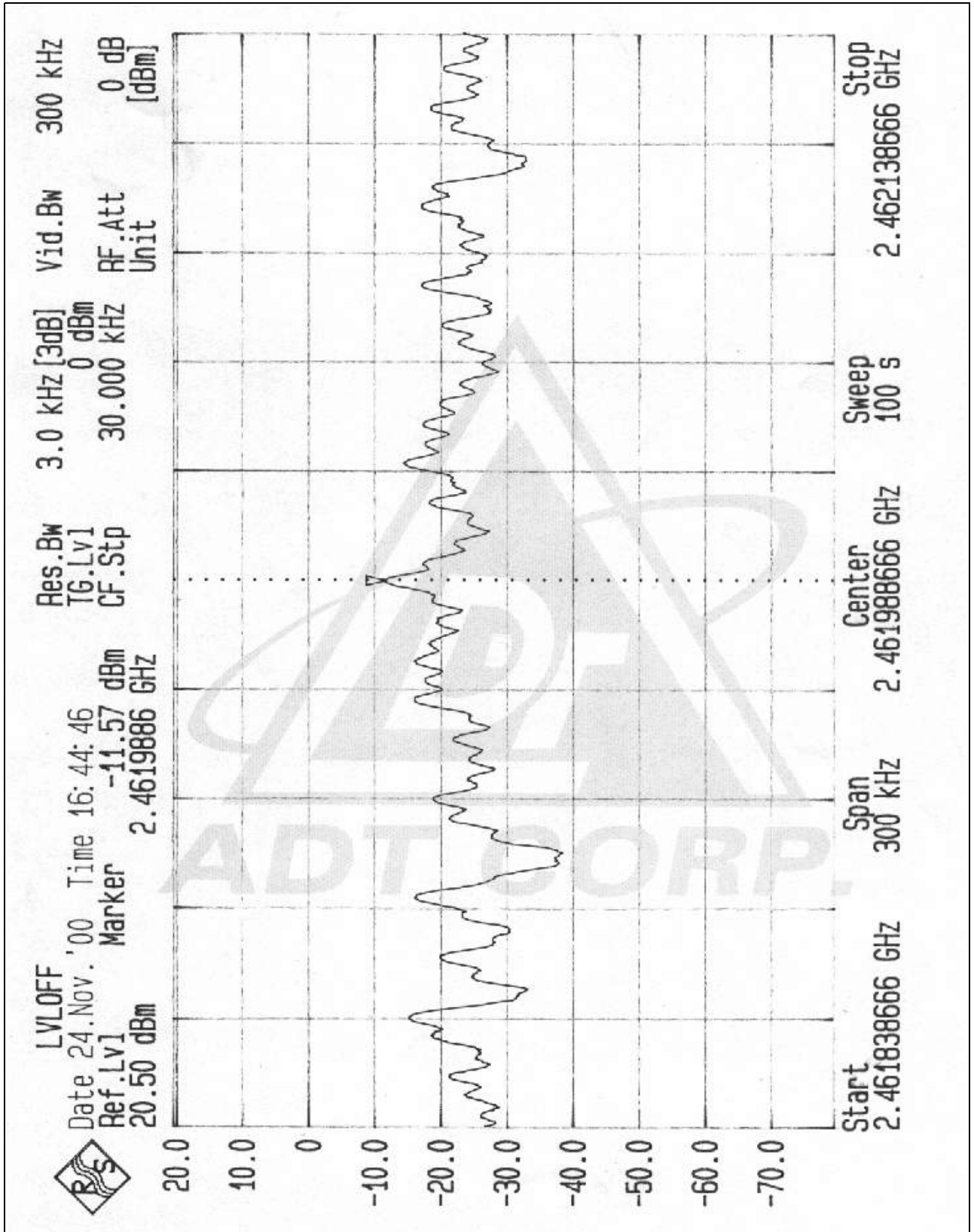


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## 6.7 Band Edges Measurement

### 6.7.1 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
<b>ROHDE &amp; SCHWARZ TEST RECEIVER</b>	<b>ESMI</b>	<b>848926/005 846839/018</b>	<b>Dec 03, 2000</b>
<b>HP ATTENUATOR</b>	<b>8496B</b>	<b>3247A18505</b>	<b>Cal. on use</b>
<b>HP PLOTTER</b>	<b>7475A</b>	<b>2641V27755</b>	<b>N/A</b>

The measurement uncertainty is less than +/- 2.6dB, which is calculated as per NAMAS document NIS81.

### 6.7.2 Test Procedure

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 kHz bandwidth from band edge. The band edges was measured and recorded.

### 6.7.3 Test Setup





#### **6.7.4 EUT Operating condition**

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

#### **6.7.5 Climate Condition**

The temperature and related humidity: 26°C and 75%RH

#### **6.7.6 Test Results**

The spectrum plots are attached below.

